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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/820,380	04/07/2004	Ira B. Black	UMD-0024	7651

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EXAMINER
HAMA, JOANNE

ART UNIT	PAPER NUMBER
1632	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/820,380	BLACK ET AL.	
	Examiner	Art Unit	
	Joanne Hama, Ph.D.	1632	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 June 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *51 and 52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *51 and 52* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant filed a response to the Non-Final Action of February 13, 2007 on June 19, 2007. Claims 1-50 are cancelled. Claims 51 and 52 are new.

Claims 51 and 52 are under consideration.

Withdrawn Rejection

35 U.S.C. § 102

Applicant's arguments, see pages 6-7 of Applicant's response, filed June 19, 2007, with respect to the rejection of claims 1, 20, 46 have been fully considered and are persuasive. Applicant indicates that Woodbury et al. teach several different methods for inducing neuronal differentiation. One method involves contacting rat or human MSC with BME or alternatively DMSO/BHA (see paragraph under the heading "Neuronal Induction" at column 1 of page 365). A second method was developed which involved the steps of 1) contacting rat MCS with bFGF and 2) inducing neuronal differentiation with DMSO/BHA (see paragraph under the heading "Quantitation of Neuronal Differentiation" at column 1 of page 365). By subjecting rat MSCs to the second method, the majority of the MSCs exhibited neuronal morphologies and stained positive for NSE (~78.2%) and NF-M (~79.2%)(Applicant's response, page 7, 1st parag.). Applicant indicates that to anticipate a claim, "every element of the claimed invention must be identically shown in a single reference. Woodbury et al. do not teach or suggest the use of an antioxidant and a growth factor in the order claimed, and thus, this reference does not inherently teach the production of an insulin secreting pancreatic islet cell from an MSC (Applicant's emphasis, Applicant's response, page 7, 2nd parag.). In response,

this is persuasive. Neither of the methods of Woodbury et al. indicates the steps as listed and the rejection as it applies to this issue is withdrawn.

It is also noted that the rejection of claims 1, 20, 46 are withdrawn as the claims are cancelled.

New/Maintained Rejections

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

New claims 50, 51 are newly rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for

a method of inducing differentiation of an isolated human or rat marrow stromal cells (MSC) into a pancreatic, insulin-producing cell, said method comprising contacting said MSC with at least one antioxidant, and then culturing in DMEM/ 20% FBS/ 10ng/ml bFGF,

does not reasonably provide enablement for

a method of inducing differentiation of an isolated marrow stromal cell (MSC) from any species of animal comprising contacting isolated MSC with at least one antioxidant, thereby inducing differentiation of said isolated marrow stromal cell into an endodermal/neuronal precursor cell and contacting said endoderma/neuronal precursor cell with any growth factor thereby producing an insulin secreting pancreatic islet cell .

The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims, for reasons of record, February 13, 2007. It is noted that the rejection of claims 1, 20, 46 is withdrawn because the claims are cancelled. However, the issues that related to these claims now relate to the newly added claims, 50 and 51.

Applicant's arguments filed June 19, 2007 have been fully considered and they are persuasive in part.

With regard to the rejection being drawn to the claims encompassing differentitating isolated MSCs into any endodermal cell, Applicant has amended the claims and indicated that the method is used to arrive at insulin secreting pancreatic islet cells (Applicant's response, page 5, 2nd parag.). With regard to this issue, the rejection is withdrawn.

With regard to the claims being drawn to using MSC obtained from any species of animal, Applicant indicates that the Examiner's argument regarding enablement of any species of MSC is not consistent. On one hand, the Examiner has indicated that based upon the teachings of Thomas et al., biological processes in cells are not predictably conserved between species such as rats and humans; on the other hand, the Examiner has acknowledged that the specification teaches that the steps used to arrive at pancreatic insulin-secreting cells can be practiced in rat and human cells. Thus, Applicant has demonstrated that two species of cells, which the Examiner cited as behaving differently, do in fact behave predictably in the instant method. As such, the rejection lacks any rational for why the claims would not be enabled for MSC obtained from any species of animal. In response, this is not persuasive. Thomas et al. teaches that human and rat

marrow stromal cells do not respond to growth factors IGF-1 and IGF-2 similarly. Thomas et al.'s teaching indicates that an artisan cannot reasonably predict that cells from different species of animals respond to growth factors similarly and thus, an artisan cannot reasonably predict that MSCs obtained from other species of animals will necessarily respond to bFGF the same way. Thomas et al.'s teaching also indicates that an artisan cannot reasonably predict that growth factors can be used predictably on cells from other species of animals. Note that Thomas et al. teach that different cells react to the same growth factor differently. While the specification teaches treatment of human and rat marrow stromal cells with bFGF, this does not overcome the predictability in using any growth factor on marrow stromal cells obtained from any species of animal. Thus, the rejection as it applies to this issue remains.

It is noted that the previous Office Action had limited the claims to a specific antioxidant, beta-mercaptoethanol (see Office Action, February 13, 2007, page 4). Upon further consideration, the Examiner has enlarged the enabled scope to any antioxidant.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 51 is newly rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 51 uses the phrase, "contacting said endodermal/neuronal precursor cell with at least one growth factor thereby inducing an insulin secreting pancreatic islet cell." However, the growth factor does not induce an

insulin secreting pancreatic islet cell, it induces a marrow stromal cell to differentiate into one.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 51 and 52 are newly rejected under 35 U.S.C. 102(e) as being anticipated by Sanchez-Ramos et al., U.S. Patent 6,528,245, patented March 4, 2003.

It is noted that while the Enablement rejection was applied with regard to the scope of growth factors used in Applicant's invention, the following rejection is applied because the art teaches the steps used in the claimed method. It is noted that the instant claims encompass a) any isolated marrow stromal cell, b) treatment with any antioxidant, and c) any growth factor.

Sanchez-Ramos et al. teach that bone marrow was obtained either from mouse femurs or from human bone marrow aspirates. Following a washing and centrifugation step, the cells were resuspended in growth medium consisting of DMEM supplemented with 2mM glutamine, 0.001% beta-mercaptoethanol, non-essential amino acids and 10% horse serum. After 2 days, the non-adherent cells were removed. After the cells reached confluency, the cells were treated with trypsin and were replated after 1:2 or 1:3 dilution with the addition of EGF or PDGF (Sanchez-Ramos et al., Example1).

In the teaching of Sanchez-Ramos et al., the antioxidant is beta-mercaptoethanol and the growth factors are EGF or PDGF.

It is noted that the specification envisions the use of other growth factors to be used in the claimed method. In addition to bFGF, the specification also envisions the use of epidermal growth factor (EGF) and nicotineamide (specification, filed April 7, 2004, page 23). The claiming of a new use, new function, or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. The production of insulin-secreting pancreatic islet cells is a new property of a known method. The new property of the method does not make the method newly patentable. It is a general rule that merely discovering and claiming a new benefit to an old process cannot render the process again patentable. In re Woodruff, 919 F. 2d 1575, 1577-78, 16 USPQ2d 1934, 1936-37 (Fed.Cir. 1990); In re Swinehart, 439 F.2d 210, 213, 169 USPQ 226, 229 (CCPA 1971); and Ex Parte Novitski, 26 USPQ2d 1389, 1391 (Bd. Pat. App. & Int. 1993). As such, while Sanchez-Ramos et al. are silent as to whether insulin-secreting pancreatic cells are obtained following their treatment, the cells produced by the method of Sanchez-Ramos et al. would be expected become insulin-secreting pancreatic islet

cells because the claimed method steps of Sanchez-Ramos et al. are the same as that of the claims. Further, according to the specification, page 23), EGF is a growth factor that can be used to arrive at pancreatic cells. Absent evidence to the contrary, the culture taught by Sanchez-Ramos et al. also contains pancreatic insulin-producing cells.

Thus, Sanchez-Ramos et al. anticipate the claimed invention.

Conclusion

No claims allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joanne Hama, Ph.D. whose telephone number is 571-272-2911. The examiner can normally be reached Monday through Thursday and alternate Fridays from 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Paras, can be reached on 571-272-4517. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public. For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

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